WHAT IS CLAIMED IS:

1. A method of depositing a layer on a substrate, comprising:

determining a target process condition within a chamber of an expanding thermal plasma generator for plasma enhanced chemical vapor deposition of a coating on a substrate; the generator comprising a cathode, replaceable cascade plate and anode with concentric orifice; and

replacing the cascade plate with another plate having a configured orifice to effect the identified target process condition and

generating a plasma at the target process condition by providing a plasma gas to the plasma generator and ionizing the plasma gas in an arc between cathode and anode within the generator and expanding the gas as a plasma onto a substrate in a deposition chamber.

2. The method of claim 1, wherein the process condition is selected from the group consisting of current, plasma gas flow, arc-pressure. cathode voltage, plasma resistivity and deposition rate.

3. The method of claim 1, comprising determining a target ionization voltage applied to the plasma gas within the generator and replacing the cascade plate with another plate having an orifice configured to effect the target ionization voltage.

4. The method of claim 1, comprising determining a target ionization voltage applied to the plasma gas within the generator and replacing the cascade plate with another plate having an orifice configured with a straight wall length to effect the target ionization voltage.

5. The method of claim 1, comprising determining a target pressure of the plasma gas within the generator and replacing the cascade plate with another plate having an orifice configured to effect the target pressure.

6. The method of claim 1, comprising determining a target pressure of the plasma gas within the generator and replacing the cascade plate with another plate having an orifice configured with a straight wall length to effect the target pressure.

7. The method of claim 1, further comprising injecting a reactant gas into the plasma within the generator.

8. The method of claim 1, further comprising injecting a reactant gas into the plasma within the generator, determining a target resistivity for the plasma and replacing the cascade plate with another have having an orifice configured to effect the target resistivity.

9. The method of claim 1, further comprising injecting a reactant gas into the plasma within the generator, determining a target resistivity for the plasma and replacing the cascade plate with another having an orifice configured with a straight wall length to effect the target plasma resistivity.

10. The method of claim 1, wherein the another cascade plate orifice has a length of 1mm to less than 20 mm.

11. The deposition apparatus of claim 1, wherein the another cascade plate orifice has a length of 1.5mm to 10mm.

12. The deposition apparatus of claim 1, wherein the another cascade plate orifice has a length of 2mm to 8mm.

13. The method of claim 1, wherein the substrate is a thermoplastic substrate.

14. The method of claim 1, wherein the thermoplastic is a polycarbonate.

15. The method of claim 1, wherein the plasma is an argon or argon-oxygen-organosiloxane plasma.

16 The method of claim 1, wherein the plasma is generated to deposit successive coatings on the substrate.

17. The method of claim 1, wherein the substrate is planar.

18. The method of claim 1, wherein the substrate is curved.

19. A deposition apparatus for generating a controllable plasma; comprising:

a deposition chamber; adapted to be maintained at subatmospheric pressure;

an article support within the deposition chamber;

an expanding thermal plasma generator comprising a cathode, a single cascade plate and an anode and a communicating orifice through the cascade plate, the orifice having a length of 1mm to less than 20 mm.

20. The deposition apparatus of claim 19, wherein the cascade plate orifice has a length of 1.5mm to 10mm.

21. The deposition apparatus of claim 19, wherein the cascade plate orifice has a length of 2mm to 8mm.

22. The deposition apparatus of claim 19, wherein the cascade plate orifice diameter changes radially symetrically in the flow direction.

23. The deposition apparatus of claim 19, wherein the cascade plate orifice diameter changes radially assymetrically in the flow direction.

24. The deposition apparatus of claim 19, wherein the cascade plate exiting orifice diameter, and the anode entering orifice are matched..

25. The deposition apparatus of claim 19, further comprising a port for introducing reagents into the plasma .

26. The deposition apparatus of claim 21 wherein the reagents are introduced through a ring, nozzle, flash evaporator, nebulizer, or evaporator.

27. The deposition apparatus of claim 19, wherein the cascade plate is held in place by a threaded rod and nut combination traversing a cathode adjustment ring, cathode housing , cascade plate and anode.

28. The deposition apparatus of claim 19, comprising multiple expanding thermal plasma generators arranged to cover an extended area.

29. The deposition apparatus of claim 19, comprising multiple expanding thermal plasma generators arranged with different cascade plates to effect uniform properties on substrates.

30. The deposition apparatus of claim 19, wherein multiple expanding thermal plasma generators arranged with different cascade plates to effect different properties on flat substrates.

31. A method of depositing a layer on a substrate, comprising:

determining a target property in a plasma gas generator for plasma enhanced chemical vapor deposition of a coating on the substrate; the generator comprising a cathode, replaceable cascade plate and anode with concentric orifice; and

replacing the cascade plate with another plate having a configured orifice to effect the target property.

32. The method of claim 31, further comprising generating a plasma at the target plasma gas flow by providing a plasma gas to the plasma generator, ionizing the plasma gas in an arc between cathode and anode within the generator and expanding the gas as a plasma into a deposition chamber at a lower pressure than the plasma generator.

33. The method of claim 31, comprising determining a target ionization voltage applied to the plasma gas within the generator and replacing the cascade plate with another plate having an orifice configured to effect the target ionization voltage.

34. The method of claim 31, comprising determining a target pressure of the plasma gas within the generator and replacing the cascade plate with another plate having an orifice selected to effect the target pressure.

35. The method of claim 31, comprising determining a target resistivity of the plasma gas within the generator and replacing the cascade plate with another plate having an orifice configured to effect the target plasma resistivity.

36. A method of depositing a layer on an article, comprising:

flowing a plasma gas in a plasma generation chamber in communication with a deposition chamber, the plasma generation chamber comprising a cathode and an anode and intervening cascade plate having a first orifice configuration, the article being disposed in the deposition chamber;

generating an arc in the plasma generation chamber to create a plasma, which flows into the deposition chamber;

injecting a material into the plasma and reacting the material to deposit a layer on the article.

determining a desired layer characteristic for the article; and

replacing the cascade plate having a first orifice configuration with another plate having a different orifice configuration that provides the desired layer thickness.

37. The method of claim 36, wherein the different orifice configuration provides the desired layer thickness without change in process conditions.

38. The method of claim 36, comprising determining a desired gas pressure to create the plasma and replacing the cascade plate having a first orifice

configuration with the another plate that permits the desired gas pressure without a change in ionization voltage.

39. The method of claim 36, comprising determining a desired gas flow rate to create the plasma and replacing the cascade plate having a first orifice configuration with the another plate that permits the desired gas flow rate gas without a change in generation chamber pressure.

40. A method for generating a substantially controllable plasma, the method comprising:

providing one plasma source comprising: a plasma chamber; an anode and a cathode disposed in the plasma chamber and a single cascade plate replaceably interposed between the anode and cathode; a power source coupled to the cathode; and a plasma gas inlet;

providing a plasma gas through the plasma gas inlet to the plasma chamber;

generating a plasma in the plasma chamber;

controlling the plasma by replacing the cascade plate with another having an orifice geometry to obtain a desired plasma process condition.

41. An article produced by the method of claim 40.